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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,914	12/01/2003	Gerhard Karl Strauch	03345- P0045A	3152

24126 7590 05/01/2006

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EXAMINER	
ARANCIBIA, MAUREEN GRAMAGLIA	
ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,914	STRAUCH, GERHARD KARL	
	Examiner	Art Unit	
	Maureen G. Arancibia	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,183,565 to Granneman et al. in view of U.S. Patent 5,318,801 to Snail et al.

In regards to Claims 1, 13, and 14, Granneman et al. teaches a method for the short-duration thermal treatment (Column 2, Lines 21-22) of a flat semiconductor substrate 3 to which heat is supplied on both sides at least partially through heat conduction via a heat-conducting medium comprising a first gas. (Column 3, Lines 10 - Column 6, Line 28). The heat-conducting medium is controlled individually on the two sides of the substrate in such a manner that the respective surface temperature is time-controlled taking into account the respective heat exchange via thermal radiation. (Column 3, Lines 10-65; Column 5, Lines 26-55)

Granneman et al. does not expressly teach that the heat-conducting medium is a mixture of at least two gases with very different thermal conductivities, and that it is the mixing ratio that is set individually on the two sides of the substrate to allow the time-control of the surface temperature.

Snail et al. teaches that a heat-conducting medium can be a mixture of at least two gases with very different thermal conductivities, and that the mixing ratio can be set to allow time-control of the surface temperature of a substrate. (Column 5, Line 1 - Column 6, Line 16)

It would have been obvious to one of ordinary skill in the art to modify the method taught by Granneman et al. to have the heat-conducting medium be a mixture of at least two gases with very different thermal conductivities, with the mixing ratio be set individually (rather than the flow of a single gas) on the two sides of the substrate to allow the time-control of the surface temperature. The motivation for making these modifications, as taught by Snail et al. (Column 5, Lines 25-30, 42-46 and 58-61), would have been to allow for precision temperature control during high heat load processes, such as CVD.

In regards to Claims 3 and 4, Granneman et al. teaches that the temperature can be the same (Column 5, Lines 40-50) or different (Column 5, Line 63 - Column 6, Line 20) on the two sides of the substrate during the temperature-influencing action.

In regards to Claim 5, the combination of Granneman et al. and Snail et al. discussed above does not expressly teach that the gases can be hydrogen and nitrogen or helium and argon.

Snail et al. additionally teaches that the combination of gases can include hydrogen, nitrogen, helium, or argon (Table), and specifically teaches the combination of helium and argon (Examples).

It would have been obvious to one of ordinary skill in the art to further modify the combination of Granneman et al. and Snail et al. to have the mixture of gases be either hydrogen and nitrogen or helium and argon. The motivation for doing so, as taught by Snail et al. (Table; Column 6, Lines 1-20; Examples), would have been to have a mixture of gases sufficiently non-reactive with the process components and with sufficiently different thermal conductivities to provide precision temperature control of the substrate during high heat load processes.

In regards to Claim 6, Granneman et al. teaches a continuous flow of gas into a gap space between temperature-influencing devices 6, 7 and the substrate. (Figures 1 and 2; Column 5, Lines 12-19)

In regards to Claim 7, Granneman et al. teaches that the gas flow is controlled by mass flow controllers. (Column 6, Lines 24-28)

In regards to Claim 8, Granneman et al. teaches that the substrate is mounted freely floating on a gas cushion formed by the gas stream associated with the underside of the substrate. (Figure 2; Column 5, Lines 12-19)

In regards to Claim 9, Granneman et al. teaches that the substrate can be driven in rotation, floating freely, by the gas stream that comprises the heat-conducting medium. (Column 6, Lines 58-64)

In regards to Claim 10, Granneman et al. teaches that the temperature control involves supply of heat. (Column 3, Lines 10 - Column 6, Line 28)

In regards to Claim 11, the combination of Granneman et al. and Snail et al. discussed above teaches that the gas composition changes over the course of time. Granneman et al. also teaches that the pressure can change. (Column 3, Lines 60-65)

In regards to Claim 12, Granneman et al. teaches that the amount of heat dissipated by the mass flow of the heat-conducting medium is negligible. (Column 5, Lines 41-47)

Response to Arguments

3. Applicant's arguments filed 10 February 2006 have been fully considered but they are not persuasive.

In regards to Applicant's argument that Snail et al. does not show a mixture of different gases *on both sides* of the substrate, and that therefore, the combination of Granneman et al. and Snail et al. does not render the independent claims obvious, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Granneman et al. teaches a heat-conducting medium comprising a first gas *is controlled individually on the two sides of a substrate* in such a manner that the respective surface temperature is time-controlled taking into account the respective heat exchange via thermal radiation. (Column 3, Lines 10-65; Column 5, Lines 26-55) Granneman et al. does not expressly teach that the heat-conducting medium is a mixture of at least two gases with very different thermal conductivities, and that it is the mixing ratio that is set individually on the two sides of the substrate to allow the time-

control of the surface temperature. However, Snail et al. teaches that a heat-conducting medium can be a mixture of at least two gases with very different thermal conductivities, and that the mixing ratio can be set to allow time-control of the surface temperature of a substrate. (Column 5, Line 1 - Column 6, Line 16) The obviousness rejection is based on the assertion that it would have been obvious to modify the method taught by Granneman et al. of individually controlling the heat-conducting medium on the two sides of a substrate to allow time-control of the surface temperature in view of the teachings of Snail et al. to perform the time-control of the surface temperature by having the heat-conducting medium be a mixture of at least two gases with very different thermal conductivities, with the mixing ratio being set individually (rather than the flow of a single gas) on the two sides of the substrate. The motivation for making these modifications, as taught by Snail et al. (Column 5, Lines 25-30, 42-46 and 58-61), would have been to allow for precision temperature control during high heat load processes, such as CVD. In other words, one of ordinary skill in the art would have found it obvious to apply the teachings of Snail et al. to the treatment of both sides of the substrate, as taught by Granneman et al., with a reasonable expectation of success in obtaining the benefit of precision temperature control during high heat load processes on both sides of the substrate.

Applicant presents several arguments that Granneman et al. teaches away from method taught by the combination with the teachings of Snail et al. None of these arguments are persuasive. Specifically, in response to Applicant's argument that incorporating the teachings of Snail et al. would require discarding the teachings of

Granneman et al. of heating the side sections through which the heat conducting medium is supplied, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the teachings of Snail et al. would have suggested to one of ordinary skill in the art to have the heat-conducting medium be a mixture of at least two gases with very different thermal conductivities, with the mixing ratio being set individually (rather than the flow of a single gas) on the two sides of the substrate, as discussed above, not to do away with the heating of the side sections through which the heat-conducting medium is supplied in Granneman et al. or to in any way destroy or render unsatisfactory for their intended purpose the teachings of Granneman et al.

In response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which Applicant relies (i.e., that having the two sides of the substrate at different temperatures may lead to undesirable deformation) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, this argument further fails in view of Applicant's recitation in Claim 4 that the "temperature is different on the two sides during the temperature-influencing

action." Finally, as discussed above in regards to Claims 3 and 4, Granneman et al. teaches that the temperature can be the same (Column 5, Lines 40-50) or different (Column 5, Line 63 - Column 6, Line 20) on the two sides of the substrate during the temperature-influencing action.

In regards to Applicant's argument that Granneman et al. teaches that "only limited heating can take place effectively by heating the gases," the section of Granneman et al. to which Applicant refers (Column 2, Lines 1-3) refers to Granneman's prior art ("the above mentioned Netherlands application"). Granneman et al. does not "reject this approach," as Applicant asserts, but actually improves upon the heating of the substrate that can be obtained by heating the gases by adjusting the gap between the heated side sections and the substrate (Column 2, Lines 6-30), and by independently controlling the heat-conducting medium on the two sides of the substrate, including the thermal conduction properties of the heat-conducting medium on the two sides, as discussed above. (Column 3, Lines 10-65) These teachings, in combination with the teachings of Snail et al., render obvious the claimed invention.

In response to Applicant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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